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company's affairs by the government, within the past year, that was made the most serious charge in the inspector's report. It is too soon to say what the outcome of all this will be, though it seems highly probable that the company's charter will be modified, and its administration re-organized.

Mexico was a long time in cutting loose from the old Spanish ideas of national exclusiveness. Various slight changes were made from time to time in the laws of the colonial period, aimed at foreigners; but it was not until 1842 that foreigners were allowed to own real estate in Mexico, and even then they were hedged about with many restrictions, such as the prohibition of holding more than two pieces of property in the same political department. Yet the country has long been desirous of enjoying the benefits of immigration. Efforts to secure them have been made along two lines. Many contracts have been made for the survey and opening of unoccupied lands, payment for the work being partly made in grants of lands, with the hope of inducing colonization to take them up; and the government has directly undertaken to plant and support colonies. Both methods have resulted, in the words of Minister Pacheco in a special report on the subject made last year, "only in bitter disappointment and the loss of large sums to the national treasury."

Particularly costly and disastrous were the attempts at colonization made by President Gonzales during the term of his administration. Italian immigration was the thing he aimed at. Large bodies of immigrants were induced to come from Italy; many Italians went to Mexico from New York, the Mexican consuls getting so much a head for every one shipped, and were located on government lands selected for the purpose. But the plan was wretchedly conceived, and came to nothing except great suffering to the immigrants, and immense expenditures to the treasury. The minister of public works, in the report alluded to, referring to these experiments, says that the outlay upon them amounted to upward of \$1,500,000, and that there is practically nothing to show for it all to-day.

It would be easy to assign reasons for this long series of failures. The unsettled condition of the government, bad systems of taxation, poor methods of farming, and lack of means of transportation, have undoubtedly had much to do with the unsatisfactory results; but perhaps a deeper cause than any other is the lack of demand for small holdings of land. The system of great ranches seems to be the only one possible or profitable in the case of the land at present unoccupied. Small farming can be carried on successfully only in the neighborhood of cities, and there all the available land has long since found owners. A farm of a few acres in a remote location is practically of no value to its owner. This was pretty thoroughly shown in the experiments tried by Juarez. He had the French communal system made obligatory in certain localities, in the hope of raising up a generation of small proprietors; but in a very short time it was found that all the owners of small holdings had sold out, so that the land was again in the hands of one or two ranchmen. That there is really no demand for small properties anywhere along the American frontier, is also shown in the ridiculously low prices set upon government lands in the border States. According to a presidential decree of last December, the price of public lands in those localities for 1889 and 1890 was fixed at an average of about fifty cents the hectare, or say twenty-five cents an acre. With thousands of acres for sale at such prices, and no bidders, the difficulties in the way of Mexican colonization are of themselves apparent.

Notwithstanding the numerous failures at colonizing portions of Mexico, we cannot but consider the prospects of a great part of the area owned by the International Company as favorable. The rapid progress of Southern California cannot fail to have a beneficial influence upon the adjoining region, which is very similar to it in character. Formerly the whole of the peninsula was considered a desert; but it has been shown that in its northern portion there is an abundant supply of water. This is derived from the great chain of mountains indicated on the accompanying sketch-map, the highest parts of which are said to be more than ten thousand feet in height. Mr. C. Nordhoff, in his pamphlet "Peninsula California," quotes the following description of this mountain-range from a report of its explorer, Col. D. K. Allen: "This great mountain region

lies about one hundred miles south-east of Ensenada, seventy-five miles east of San Quintin, and from thirty to thirty-five miles west of the Gulf of California. The range is about one hundred and ten miles in length, and from fifteen to thirty in width. Water is abundant everywhere, and only has to be husbanded in order to furnish a great supply for all the lands on the north end of the peninsula. These streams can be easily and cheaply dammed, and all of the pine can be put into them and floated down to the heads of the valleys. This can be done with the San Rafael, which is a grand stream with five large branches, draining nearly all of the north end of San Pedro; also with the San Domingo, which drains the western side of the mountains; and the logs or timber can be taken out at the upper end of San Rafael valley near Colnett, or at the upper end of San Quintin valley near San Ramon. Either water route is perfectly feasible."

The peninsula is undoubtedly rich in minerals, but its great development in this direction can come only with a denser population. Gold, silver, and copper are at present worked by various companies. With these possibilities of irrigation, with a healthful climate favorable to the carrying-on of valuable cultures, with good pastures in the mountainous region and an ample supply of timber, and with rich mineral deposits, there can be no doubt that the country will be developed as soon as its political state appears sufficiently stable.

## HEALTH MATTERS.

### The Use of Tobacco.

IN a communication to the *New York Medical Record*, Dr. F. H. Bosworth discusses the effect of the use of tobacco on the health. He says that the Anglo-Saxon races have been smoking and chewing now for nearly four hundred years. They contracted the habit from a race which, as far as history and tradition teach us, were remarkable for their vigor of body and mind as well, and, as far as we know, were an unusually long-lived people. In the time that we have been using the weed there is no evidence to show that the race has in any way deteriorated, but, on the contrary, it is abundantly shown that the average duration of life has increased nearly fifty per cent. There is no evidence to show that in this time the race has been more subject to disease, but rather that they are less so. There is no evidence to show that the race has lost any thing in its intellectual activity, but, on the contrary, it has been a time of most marvellous fecundity in all that is great in literature.

He gives the following analysis of tobacco, that of Passelt and Reinmann, which is accepted as correct by authorities:—

### Analysis of the Leaf.

Nicotine.....	0.060
Volatile oil.....	0.010
Bitter extractive matter.....	2.870
Gum and malate of lime.....	1.740
Chlorophyl.....	0.267
Albumen and gluten.....	1.308
Malic acid.....	0.510
Salts of pot. ammonia, etc.....	0.734
Silica.....	0.088
Water.....	88.280
	100.00

Leaving out from this analysis the volatile oil, extractive matter, albumen, gluten, and chlorophyl, and negative and inert matter, and we have left a substance containing 1 part of nicotine, 4 parts of salts of lime, ammonia, etc., with 88 parts of water in 100. The percentage of nicotine in various kinds of tobacco varies; Havana tobacco containing but two per cent of this poisonous element, while Virginia tobacco contains about seven per cent, according to some analyses. The moral of this is that we should always smoke the choicest brands of Havana cigars. In smoking, the ammonia salt may become the source of considerable discomfort in the burning and smarting tongue which results from excessive and continuous practice of the habit: of course, in chewing, this action is not noticeable. We thus are reduced to the action of nicotine for the possible deleterious influence of the plant. This element, as before stated, is present in varying proportions in the tobacco-leaf;

according to some writers, from one to seven per cent. It is a clear and colorless fluid, highly volatile, and of an extremely pungent, disagreeable odor, and strong, burning taste. It is rapidly absorbed into the fluids of the body, and is one of the most deadly poisons known. It is rendered volatile by burning the leaf, and is present in the smoke of the tobacco. It is generally accepted that the volatilized nicotine in the tobacco-smoke is more actively absorbed than is the case when the leaf is chewed; but in either case the nicotine absorption is the essential element in the production of all of the evils which can be charged to the habit. Nicotine acts on the heart, nervous system, stomach, and upper air-passages. The prominent symptoms which may be caused by nicotine, with reference to the heart, are intermission and palpitation; that is, it produces certain functional disturbances of the heart, which, for the time, may be the source of more or less discomfort to the patient; but the important point is, does this condition ever lead to one of organic lesion?

Dr. Bosworth thinks that the action of nicotine on the nervous system may be summed up by the statement that it produces disturbance of brain, giddiness, muscular tremors with exhaustion, sleeplessness, and depression of spirits. He does not advocate the use of tobacco, but asks, "Are we not often liable to fall into a mistake in universally condemning its use without sufficient grounds, and is it not better when our advice, as physicians, is asked, in this respect, to base our answers entirely on the evidences of the effect of the drug upon each individual patient, and, furthermore, to recognize the fact that this effect is shown by well-marked and easily recognized subjective symptoms? I have frequently, when asked this question, 'Does smoking hurt me?' frankly said to my patients, 'You know better than I do; no man uses tobacco to his harm without being fully conscious of it.' As regards its effect on the diseases of the upper air-passages, in a practice of twenty years largely devoted to treatment of these affections, I recall but exceedingly few cases wherein I have found it necessary to interdict the use of tobacco as injuriously affecting in any way these passages, or as interfering with the success of treatment."

The object of this paper is not a plea for the use of tobacco, but simply to suggest whether we had not best abandon the idea that it is a drug whose use is pernicious in every way to body, mind, and morals, and rather to take the view that it is one of God's good gifts to man, — a "virtuous herb, divine, rare, superexcellent tobacco" when properly used, but when taken "as tinkers do ale, 'tis hellish, devilish, and damned tobacco."

#### Diphtheria.

THE subject of diphtheria is now attracting unusual attention on the part of boards of health and physicians throughout the country. The Kings County Medical Association has spent the entire winter in its discussion, and the medical profession of Boston has recently devoted a great deal of time and thought to its causation and methods of prevention. In the present number we give a *résumé* of the discussions and reports as they have appeared in the meetings of the Suffolk District Medical Society. There is no question more important for sanitarians to consider than the means of preventing the spread of this dread malady. From a recent report we find that in a single week its victims were as follows: in Brooklyn, 21; New York, 47; Philadelphia, 6; St. Louis, 11; Chicago, 26; Boston, 11; Cincinnati, 10; Paris, France, 37; and London, 25. It has become a permanent resident in almost every city of the world. In the treatment of this disease, but little progress has been made. If its ravages are ever to be lessened, it must be done through its prevention.

Dr. J. H. McCollom has presented to the Suffolk District Medical Society some observations on diphtheria in Boston during the year 1888. Of this disease, 1,411 cases occurred during that period, of which 470, or 33.3 per cent were fatal. After a thorough study of the facts, he comes to the conclusion that the theory advanced by some recent observers, that diphtheria prevails more extensively in the vicinity of old water-courses and dry river-beds, certainly is not tenable so far as that district is concerned. Neither does the theory of defective drainage explain the prevalence of the disease: for, in the first instance, there are no old water-courses or dry river-beds in that locality; and, in the second place, the drainage the

past year, when there has been a large number of cases, has been much better than in 1887, when there were very few cases. Contagion is, therefore, the only possible explanation for this condition. From the opinion of the observers cited, from the fact that the disease has invaded districts where the sanitary conditions were remarkably good, from the fact that out of 1,117 examinations in only 596 instances was defective drainage found, from the fact that the source of contagion could only be traced in 276 instances out of 1,383 reported cases, and from the fact that there has been a marked increase in the disease when children were brought together in large numbers, it would seem that the general extension of the disease must be attributed to contagion; not from the recognized, but from the unknown and mild cases.

At a recent meeting of the same society a committee was appointed to confer with the board of health as to the necessity and feasibility of further measures to limit the spread of diphtheria. The committee, at the last meeting, reported that under the existing laws the board has authority to isolate cases of diphtheria which are reported to them, or in any way fall under their observation, but that this power is not in all cases available, for lack of proper financial means. They may, for instance, send cases to the City Hospital or other institutions willing to receive them, and having proper facilities for isolation and treatment; but, once there, the authority of the board ceases, and they cannot prevent the removal of the case at any time by its parents, guardians, or friends, nor can the hospital authorities compel their patients to remain. The board can also compel proper disinfection where cases are made known to them. They can enforce the legal penalties for non-report on the part of physicians, but are here met with the well-known fact that in many cases it is impossible for the most skilful diagnostician to differentiate for the first twenty-four or even forty-eight hours between non-contagious, tonsillar, pharyngeal, and nasal diseases and genuine diphtheria. There is a belief among those not well informed, of the community, that this disease is neither infectious nor contagious, and may therefore be safely and more conveniently treated in their own houses. It is believed by the committee that very much may be done in this direction through the influence of this society by creating more correct views in the public at large as to the contagiousness of the disease, the absolute necessity of isolation, and a more earnest co-operation with the board of health. The public has now become so fully enlightened as to the dangers from small-pox, that the board meet with comparatively little opposition in the most stringent and arbitrary enforcement of isolation, so far as that disease is concerned; and it is believed that the same enlightenment with regard to diphtheria would do very much towards diminishing its spread by inducing a more ready compliance with the necessary measures of isolation and disinfection. The committee recommends that this society, both collectively and individually, should foster, so far as they can, a proper sentiment in the community as to the contagiousness of this disease, and more especially should encourage its earliest possible recognition and report to the board of health in each individual case. By these methods a public sentiment will sooner or later be created, justifying and requiring from the proper authorities a suitable separate hospital for the treatment of infectious and contagious diseases, such, for instance, as is required by law in England, with ample means for its support, and over which there shall be as absolute authority as already exists over the hospital for small-pox. In the absence of these necessary facilities for thorough isolation, it is impossible to exercise an efficient control over the various dangerous diseases that from time to time become epidemics in our cities, or which have gained a permanent foothold in Boston.

The Boston Board of Health has issued a circular for the purpose of more widely extending the knowledge of a few well-attested facts concerning diphtheria, and reminding all persons that greater care should be exercised to prevent the spread of this much-dreaded disease. The circular states that diphtheria is contagious and infectious, and may be easily communicated, either directly or indirectly, from person to person. It may be conveyed directly in the act of kissing, coughing, spitting, sneezing; or indirectly by infected articles used, as towels, napkins, handkerchiefs, etc. The poison clings with great tenacity to rooms, houses, articles of furni-

ture and clothing, and may occasion the disease even after the lapse of months. Diphtheria attacks all classes, at all ages, and at all seasons of the year. By preference it attacks children and those who are debilitated from exposure to filth, dampness, or foul air from whatever source. When a case of diphtheria occurs in any family, the sick person should, if possible, be taken to a hospital; otherwise he should be placed in an upper room apart from the inmates of the house, and should be nursed, as far as possible, by one person only. The sick-chamber should be well warmed, exposed to sunlight, and well aired; its furniture should be such as will permit of cleansing without injury; and all extra articles, such as window and table drapery, woollen carpets, upholstered furniture, and all hangings, should be removed from the room during the sickness. The physician and nurse, as a rule, should be the only persons admitted to the room.

Visitors to the infected house should be warned of the presence of a dangerous disease therein, and children especially should not be admitted. All clothing removed from the patient or the bed should be at once placed in a solution of corrosive sublimate—two drams to the gallon of water, in a wooden vessel—by the nurse before being carried through the house or handled by any other person. They may be soaked in this fluid for a convenient time, and then boiled for one hour. It is better not to use handkerchiefs for cleansing the nostrils and mouth of the patient, but rather soft rags, which should be immediately thereafter burned. All vessels for receiving the discharges of the patients should constantly contain some of the disinfecting liquid. Water-closets and privies in the house should be disinfected daily with a solution of fresh chloride of lime (half a pound to the gallon of water). Every kind and source of filth in and around the house should be thoroughly removed, and disinfectants freely used. Cleanliness tends both to prevent and mitigate the disease. Drains should be put in perfect order and ventilated by a four-inch straight pipe extended above the highest point of the roof of the house in every instance, terminating at a distance from any chimney or other ventilator. Children in the family should not attend school or mingle with other children until the patient has wholly recovered and all infected articles have been disinfected, and these facts certified by a responsible physician.

On the recovery, removal, or death of the patient, the most thorough disinfection should follow. Close up all apertures in the room tightly; hang up, unfolded, all articles of bedding, clothing, etc.; remove all mattress-covers for the free exposure of their contents; place in an iron pan four pounds of brimstone for each thousand cubic feet of space in the room; place the pan on two bricks or an iron rest in a tub containing water; pour a little alcohol on the brimstone, ignite it with a match, and leave the room closed tightly and guarded for not less than ten hours. The fumes of burning brimstone are dangerous to breathe, and will kill animals and plants. After fumigating has been done, the room and every thing in it should be thoroughly aired. The walls and ceilings should be brushed, and the floors and other wood-work washed with water containing two drams of corrosive sublimate to the gallon of water, and all vessels and utensils used in the room should be thoroughly washed with the same solution. All wash-bowls, water-closets, sinks, and slop-hoppers should be washed with a solution of chloride of lime (one half-pound to the gallon of water). When death occurs, the body should be immediately placed in the coffin, wrapped in a sheet saturated with a solution of corrosive sublimate (two drams to the gallon of water), and the coffin tightly and finally closed. No public funeral should ever take place at the house where the patient died, or elsewhere, unless the coffin remains hermetically sealed. Corrosive sublimate is a poison.

**NORMAL MICROBES IN THE HUMAN STOMACH.**—M. Abelous recently communicated to the Académie des Sciences the results of an investigation of the microbes of his own stomach. He succeeded in obtaining and studying no less than sixteen separate and distinct species. Of this number, seven have already been described, while nine appear to be new ones. The known ones are *Sarcina ventriculi*, *Bacillus pyocyaneus*, *Bacterium lactis aerogenes*, *B. subtilis*, *B. mycoides*, *B. amylobacter*, and *Vibrio rugula*. One of the unknown species was a coccus; the others were bacilli. Especial interest attaches to the function which Abelous believes

these micro-organisms perform in connection with digestion. Thus he found that 10 attack albumen, 12 fibrine, 9 gluten, 10 cause the more or less complete transformation of lactose into lactic acid, and 13 form variable quantities of glucose from starch.

**ANATOMICAL AND PHYSIOLOGICAL MEMORANDA.**—The following anatomical and physiological memoranda, which we copy from the *New York Medical Record*, will be of interest to our readers, and serve a useful purpose as a matter of reference: "In each respiration an adult inhales one pint of air. Man respire sixteen to twenty times a minute, or twenty thousand times a day; a child, twenty-five to thirty-five times a minute. While standing, the adult respiration is twenty-two; while lying, thirteen. The superficial surface of the lungs, i.e., of their alveolar spaces, is two hundred square yards. The amount of air inspired in twenty-four hours is ten thousand litres (about ten thousand quarts). The amount of oxygen absorbed in twenty-four hours is five hundred litres (744 grams); and the amount of carbonic-acid gas expired in the same time, four hundred litres (911.5 grams). Two-thirds of the oxygen absorbed in twenty-four hours is absorbed during the night-hours from 6 P.M. to 6 A.M. Three-fifths of the total CO<sub>2</sub> is thrown off in the day-time. The pulmonary surface gives off one hundred and fifty grams of water daily in the state of vapor. An adult must have at least three hundred and sixty litres of air an hour. The heart sends through the lungs eight hundred litres of blood hourly, and twenty thousand litres, or five thousand gallons, daily. The duration of inspiration is five-twelfths, of expiration seven-twelfths, of the whole respiratory act. During sleep, inspiration occupies ten-twelfths of the respiratory period."

**LIME-BURNERS FREE FROM CONSUMPTION.**—It is said that lime-burners are free from consumption. Halter has observed this in the Lengerich kilns. The temperature of the air inhaled at these kilns is 105° F. to 158° F., and to this Halter attributes the immunity of the lime-workers more than to any thing else. He recommends for the treatment of consumption the inhalation of dry air heated to from 248° F. to 374° F. His theory is that the development of the bacilli is prevented by this high temperature.

**AUSTRALIAN RABBIT-PEST.**—The experiment of introducing the virus of chicken cholera into Australia, with the object of exterminating the rabbits which have become such a plague in that country, has proved a failure.

**RHEUMATISM.**—Dr. Terc contributes to the *Wiener Medicinische Presse* a novel method of curing rheumatism. He observed, that, when rheumatic persons were stung by bees, the swelling which usually follows such stings was very slow in appearing, and, if the persons were stung repeatedly, it did not appear at all; the result of such continued stinging being to cure the rheumatism, which showed no tendency to recur. He followed out this idea in the cases of 173 persons, 39,000 stings being required. Both acute and chronic cases were cured by this treatment.

#### ELECTRICAL NEWS.

##### The Discharge of a Leyden Jar.

DURING the past year, Professor O. J. Lodge has experimented and written a great deal on the subject of lightning-conductors. He has taken up the subject of electrical discharges, and has shown that many of our notions on the subject require modification. But the experiments he has made have been necessarily on a small scale, and, in applying his results directly to the problem of protection from lightning-discharges, he may be greatly in error. Still he has called attention to and stimulated inquiry on a subject of vital importance, and his work is already bearing fruit in the investigations begun by a number of other workers.

On March 8, Professor Lodge delivered a lecture at the Royal Institution of Great Britain, on the discharge of a Leyden jar. When such a jar is charged with electricity, and then the two coatings are discharged by connecting them by a short, thick wire, the result is not a single current of electricity along the wire in one direction, but the current passes back and forth, its intensity diminishing until it finally dies away and the jar is fully discharged.